



Joint Modeling and Simulation System

Defense Modeling and Simulation Office

Briefing to Industry

Briefer: Ms Cindy Porubcansky
JMASS Program Manager
Date: 4 Jun 99



Overview

► Background

- Program status
- Model development status
- JMASS Master Schedule
- Summary



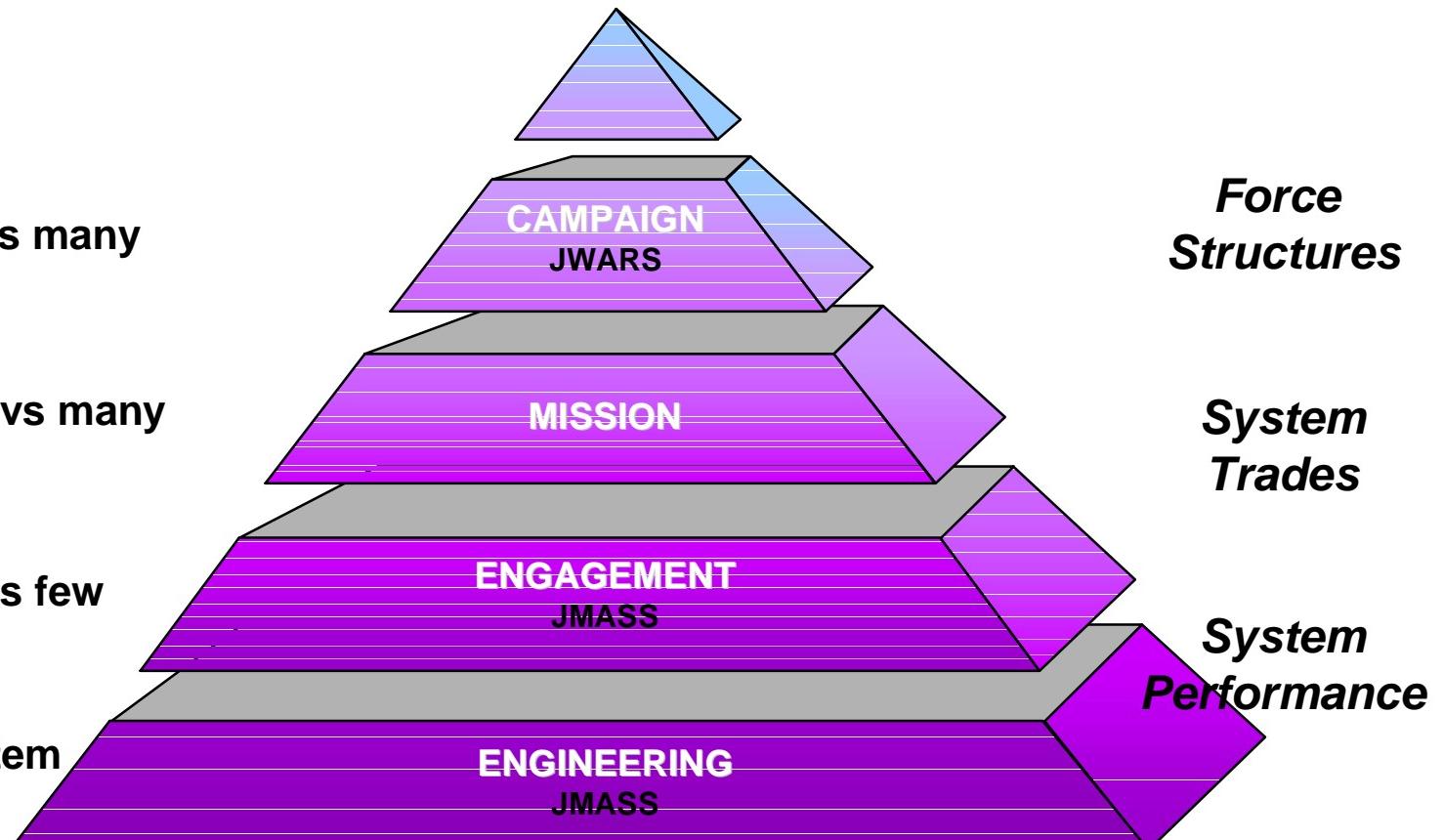
Levels of Analysis

Multi-day, many vs many

Single day, many vs many

One vs one, few vs few

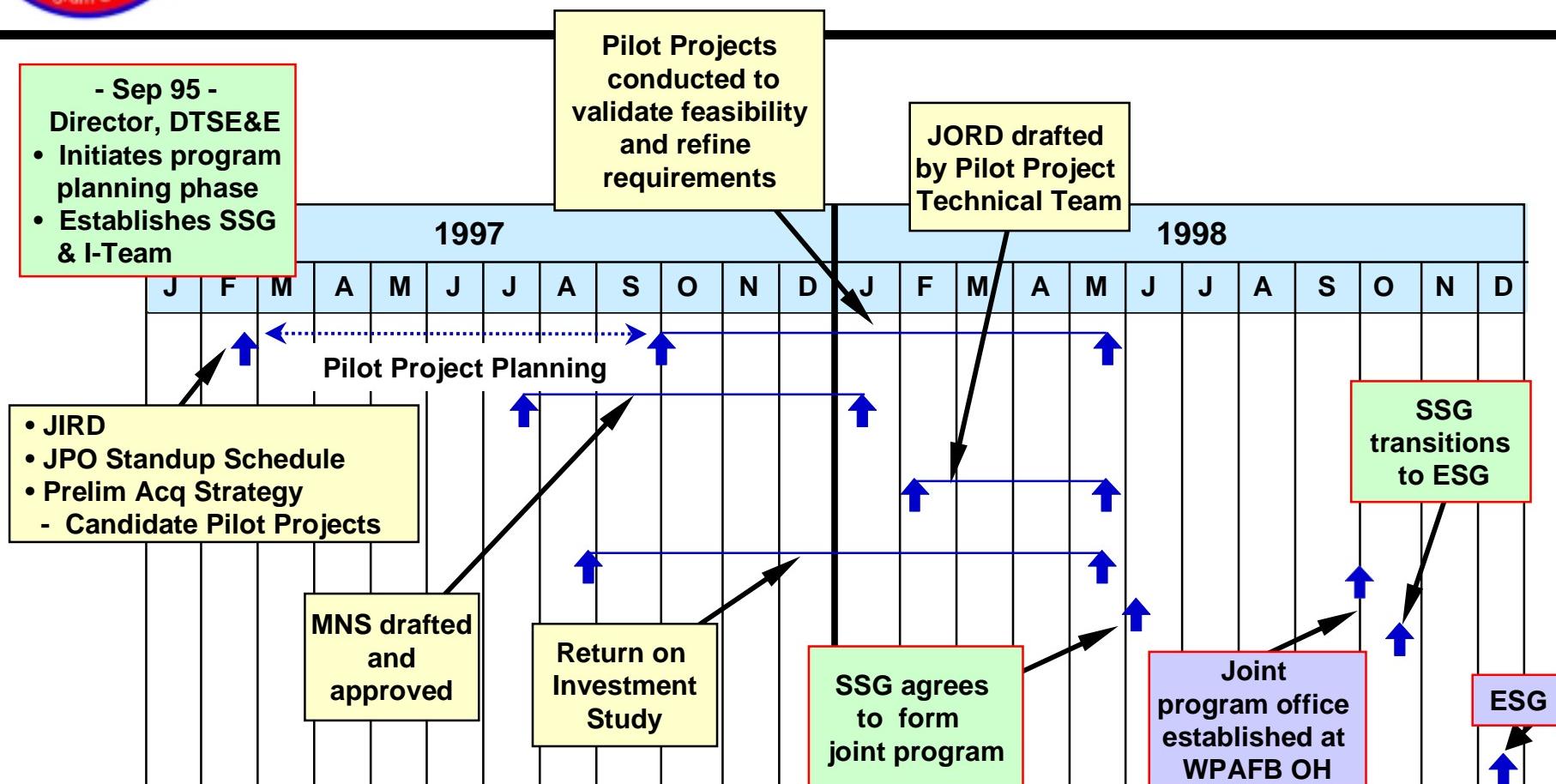
Very detailed system representations



*Results, not models, are aggregated
and passed up the pyramid*



Background

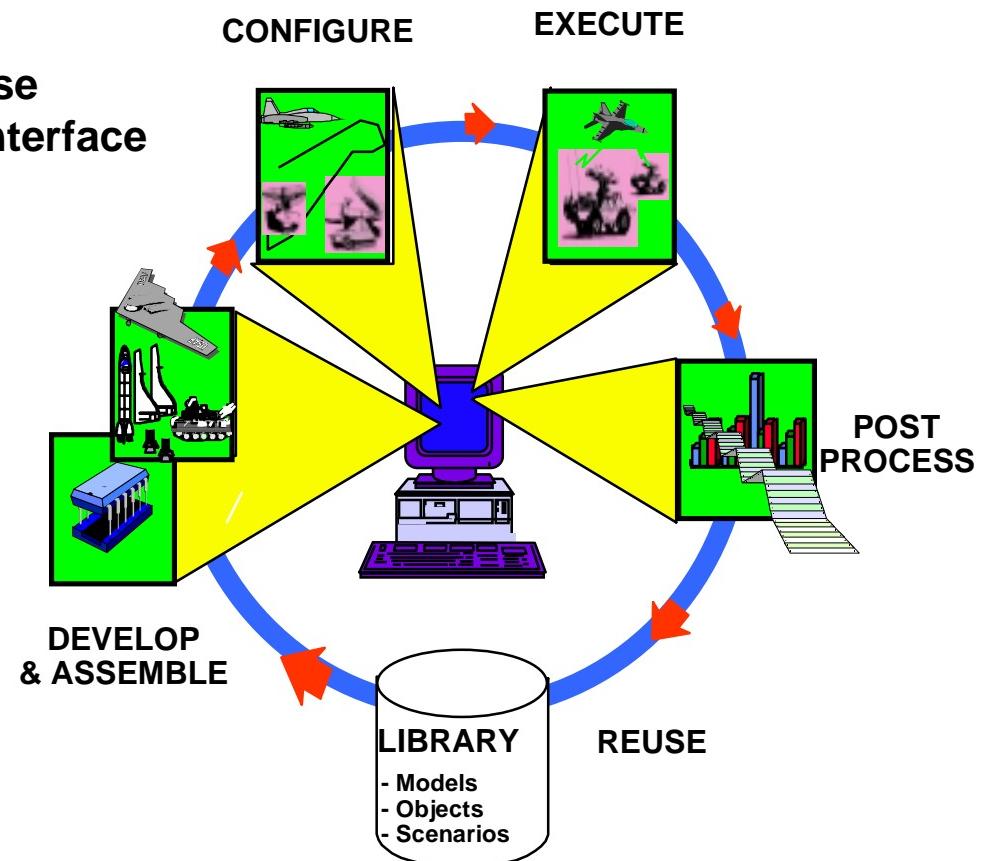


*Dr. Gansler affirmed support for program, 15 Oct 98,
"...confident ... JMASS will become a key technology that will
enable us to fully integrate modeling and simulation
into the Department's acquisition process"*



System Description

- **Model Standards**
 - Software Structural Model for Reuse
 - Model Application Programming Interface
- **Simulation Support Environment**
 - Simulation Engine
 - Visual Development Tools
 - Analysis Tools
 - COTS & Legacy Tool Interface
- **Model Library & Repository**
 - Local Model and Data Library
 - Modeling and Simulation Resource Repository



Yield is common, reusable, interoperable models



Requirements

- **Joint Modeling and Simulation System (JMASS) Operational Requirements Document (JORD) -- USAF001-98-III, 31 Aug 98**
 - Air Force signed, 20 Sep 98
 - Lt Gen Marvin Esmond, DCS for Air and Space Operations
 - Army signed, 6 Dec 98
 - Maj Gen Joseph M. Cosumano, Jr., Ass't DCS for Operations and Plans, Force Development
 - Navy signed, 6 May 99
 - Vice Admiral Conrad C. Lautenbacher, Deputy Chief of Naval Operations, Resources, Warfare Requirements and Assessments



Requirements Synopsis

(*Joint Operational Requirements Document (JORD), dated 31 Aug 98*)

- JMASS will provide the acquisition community:
 - Systems- level architecture
 - Structure for simulations, component models
 - Standards, guidelines and tools
 - Building JMASS compliant models
 - Assembling the models into simulations
 - Executing simulations over time
 - Analyzing results
 - Compliance testing suites
 - Comprehensive technical and user documentation

Implemented in a streamlined software package



Requirements Synopsis

(Joint Operational Requirements Document (JORD), dated 31 Aug 98)

- Other factors:
 - Optimize implementation to support models operating from the engineering through engagement levels
 - Initially limit services to those required by weapon system performance modeling community
 - Use to develop “pedigreed data”
 - Supports aggregated simulation systems
 - JSIMS, JWARS



JMASS Relationship to SBA

(from OUSD/DTSE&E white paper, dated 18 Feb 99)

- JMASS is one critical segment in the technical environment portion of the overall SBA strategy:
 - **Distributed Product Descriptions (DPD)**: JMASS models can be extended to be a performance-based, one-dimensional DPD with the incorporation of DPD-specific features such as user-selectable views
 - **DoD/Industry Resource Repository (DIRR)**: JMASS models will be placed in the DIRR, either individually or as a JMASS library node/pointer
 - **Data Interchange Formats (DIF)**: JMASS will use currently existing DIFs or develop new ones where they don't exist
 - **Collaborative Environments (CE)**: JMASS development environment can serve as a basis for a collaborative environment, targeted to the areas that JMASS will support



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Program Status

- **JMASS 98:**
 - Departure point for joint program
 - Developed and supported by Dynetics, Inc., Huntsville, AL
 - Analyst, model developer training available
- **Additional tools:**
 - Scenario Laydown Development Tool, SAIC, Albuquerque, NM
 - Run-time Analyst Tools, Dynetics, Inc., Huntsville AL
 - Analyst Toolkit, BDM, International, McClean, VA
 - Automated Model Conversion Tool (AMCTool), SPARTA, Inc., Laguna Hills CA
- **Joint program risk reduction activities:**
 - Real-time risk reduction effort, Amherst, Buffalo, NY;



Common Test & Evaluation Investment Program Projects

- Common Test & Evaluation Investment Program (CTEIP) JMASS projects:
 - Investigate JMASS model decomposition and reuse
 - Use HLA Run Time Infrastructure to support component-to-component communication
 - Define and prototype JMASS compliant EO/IR/UV environment model



Program Status

- **Program Research and Development Announcement**
 - **Solicitation for COTS, GOTS tools and services to meet JORD requirements**
 - **Contract awards expected NLT 1 Nov 99**



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Model Development Status

- Surface-to-Air threat models developed by Missile and Space Intelligence Center (MSIC)
 - Target Acquisition Radars developed by National Air Intelligence Center (NAIC)
 - Model deliveries on track
 - Sep 99: 3 emulative, 7 analytic models
 - Jul 00: 4 analytic models
- Air-to-Air threat models developed by NAIC
 - Aircraft, radar and missile template models
 - 8 analytic models on track for Sep 00 delivery



Model Development Status

- Air Defense Artillery analytic model developed by National Ground Intelligence Center (NGIC)
 - On track for Sep 99 delivery



JMASS Customers

- B-1 Defensive System Upgrade Program (DSUP)
 - Blue Digital System Model (DSM)
 - Electronic Countermeasures(ECM) system model
 - Threat models
- F-22
 - Blue DSM
 - Threat models
- Joint Strike Fighter (JSF)
 - Blue DSM
 - Threat Models



JMASS Customers

- **Joint Air-to-Surface Strike Missile (JASSM)**
 - Blue DSM
 - Threat Models
 - JMOOSE upgrades
- **F-15**
 - Blue DSM
 - ECM model
- **AFIWC**
 - Chaff Dispenser
 - Flares
 - RWR



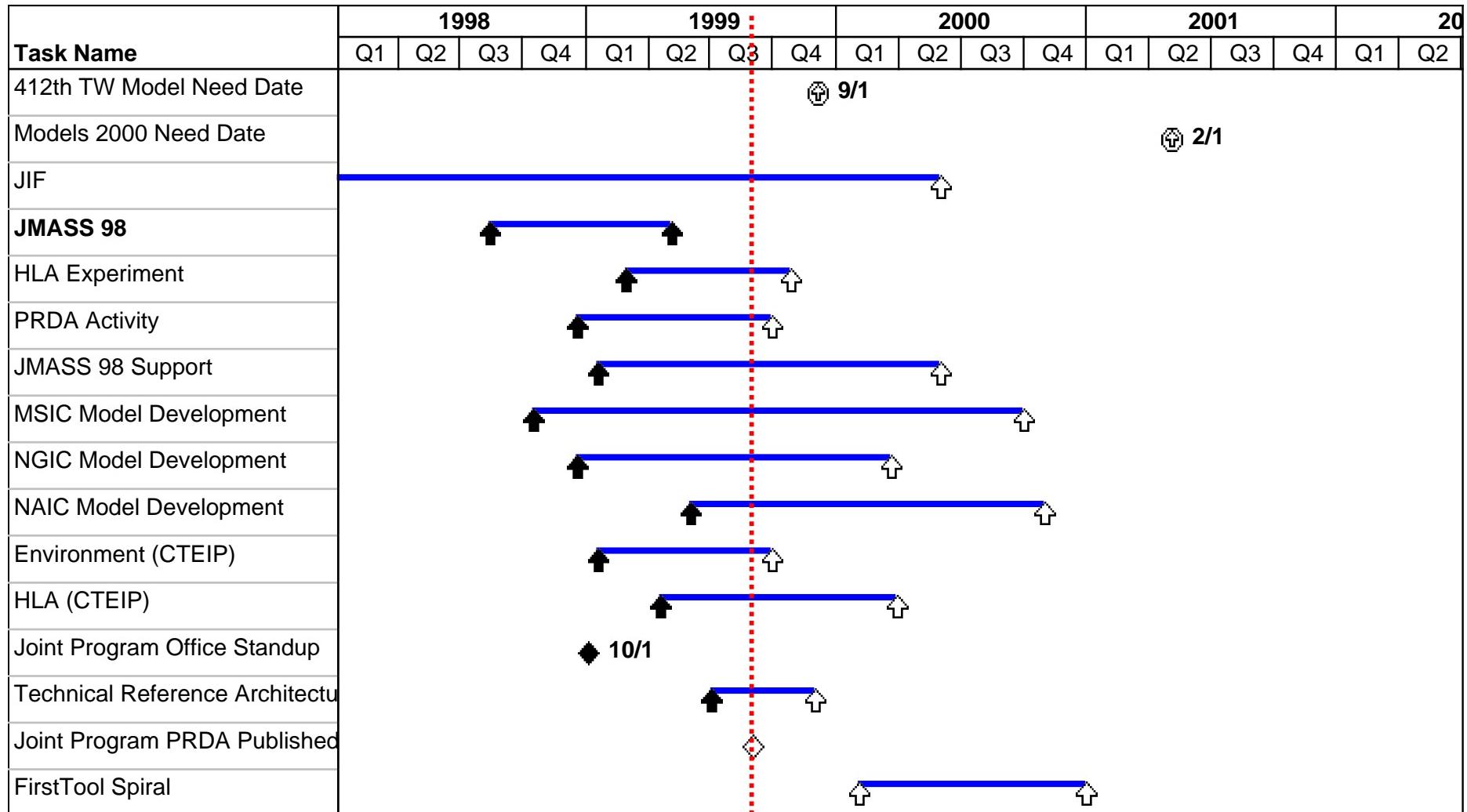
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JMASS Master Schedule

Time Now





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Summary

- JMASS 98 departure point for Joint program
- JMASS model population steadily increasing
- JMASS-compatible analyst tools increasing
- JMASS gaining wider acceptance across the modeling and simulation community



To contact JMASS Program Office

www.jmass@wpafb.af.mil